

Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

Commissioner of Conservation

AND

State Forester

FOR THE

YEAR ENDING NOVEMBER 30, 1931

DEPARTMENT OF CONSERVATION

[OFFICES: 20 SOMERSET, BOSTON, MASS.]



APR 17 1932

# The Commonwealth of Massachusetts

STATE HOUSE, BOSTON

OUTLINE OF THE

## REPORT OF THE DEPARTMENT OF CONSERVATION

The report of the Department of Conservation is divided for convenience and economy into four parts, as follows:—

Part I. The organization and general work of the Department of Conservation.

Part II. The work of the Division of Forestry. (Parts I and II are printed in this pamphlet: Public Document No. 73)

Part III. The work of the division of Fisheries and Game. (Printed separately as Public Document No. 25)

Part IV. The work of the Division of Animal Industry. (Printed separately as Public Document No. 98)

---

### PART I.

#### ANNUAL REPORT OF THE COMMISSIONER OF CONSERVATION

The annual report of the Department of Conservation is herewith submitted. In the interests of brevity all discussion of the various activities of the department will be omitted here and only introduced with the statistics of the divisions and sub-divisions.

The legislature of 1931 passed two important bills referring to Department of Conservation, Chapters 391 and 442 of the Acts of 1931.

The first created in the department a Division of Parks, which shall acquire by purchase or gift and administer for the benefit of the public lands suitable for parks or recreational use in the state outside the Metropolitan District. A director is to be appointed by the Governor for a term of three years.

The second, Chapter 442, directed the Commissioner to purchase lands at Salisbury Beach, for a state reservation, and appropriated \$50,000 for this purpose. On November 30 the Governor had not appointed the Director of Parks and as yet no steps have been taken towards the acquiring of Salisbury Beach.

In February, the offices of the Department of Conservation were moved from the State House to 20 Somerset Street, the new building of the Metropolitan District Commission. Comfortable quarters are found there provided with all modern equipment.

On January 14, the legislature by special act, made available the sum of \$103,000 for the department through the division of forestry to expend in labor on the state forests, to relieve the serious conditions existing in various municipalities of the Commonwealth. This sum was taken from our budget, \$100,000 from the amount requested for Purchase and Development of State Forests, and \$3,000 from the appropriation for Maintenance of State Forests. The men were put at work on fifty-four state forests, nurseries and lots, and 1,440 men in all were employed. The work began immediately on the passage of the act and continued until July 8. The labor was hired through cooperation of the overseers of the poor, or public welfare committees of the various cities and towns needing help. The sum of \$8,700 was appropriated for the division of fisheries and game, to be expended in needed repairs on fish hatcheries, etc.

On July 1, 1931, Mr. William C. Adams resigned as director of the division of fisheries and game, and at about the same time the Governor appointed Mr. Raymond J. Kenney, who was chief fish and game warden, to the directorship. Mr. Kenney was sworn in on July 2. He has been with the division since September 19, 1918, and is well qualified to carry on the business of the division.

## FOREST CONSERVATION

There are at this time forty-eight forests, comprising almost 115,000 acres of land, with over 3,000 acres in state owned lots, now placed in the same category as forests, and one reservation (the Standish Monument). Over 1,500,000 trees were planted on these lands this year, and about 750,000 young trees were sold to private woodland owners and farmers. The forest insects, especially the gypsy moth, were well controlled. There was a large infestation of the fall web worm, which with its unsightly web, is very conspicuous. This however, is a native pest, will not kill the trees and is a negligible factor.

Forest fires were not especially serious and were well controlled.

## CONSERVATION OF WILD LIFE

The value of wild life conservation is often inaccurately measured in terms of its results in producing good hunting and fishing. The public does not generally consider the extent of our wild life resources in so far as they are grouped under the heading of song, insectivorous and non-game birds. Nor does it consider the value of this wild life in protecting man's food supply and in contributing to his general well-being and happiness.

Ornithologists who have studied bird conditions in this State, including the late Dr. Edward Howe Forbush, estimate that there are at least 26,000,000 song and insectivorous birds dwelling here. That they are constantly on the increase is due mainly to the protection given them by the game warden force and the sanctuaries provided to aid their propagation.

Experts agree that without song and insectivorous birds, (and the majority of the former come within the scope of the latter class), life for man would become a much more difficult and expensive proposition. Crop-destroying insects would multiply so rapidly as to reduce agriculture almost to nothing.

Conservative estimates place the consumption of insects by birds in this State alone at 21,000 bushels daily for five months in the year. With an average of 50,000 insects to the bushel, a staggering total running into the billions are destroyed by the birds during the months farms are producing food and fodder.

The same game warden force of 35 trained men that protects the game birds and animals against law violators, also guard the song and insectivorous birds against one of their worst enemies,—man.

Many violations of the laws protecting the song birds are prosecuted every year by the department, and heavy fines, running as high as \$200 in one case and others beyond the \$50 mark, have been imposed by the courts within the past year on song bird killers and netters. The song bird killer, too, unlike the ordinary game law violator, has many times turned out to be of the vicious type, and game wardens on several occasions have been threatened with loss of their lives while making arrests.

## CONSERVATION OF THE HEALTH OF DOMESTIC ANIMALS

The Division of Animal Industry has charge of the control, prevention and suppression of contagious diseases in domestic animals.

The number of positive cases of rabies has decreased this year to 484 from 738 in 1930. This is undoubtedly partly due to the fact that early in the year the attention of the city and town authorities was called to the menace of this disease and the danger of the stray dog; and in June a letter was sent to all cities and towns advising that a ninety-day restraining order be adopted in their towns. There were 4,944 persons bitten by dogs, and of this number 104 were bitten by dogs affected with rabies.

During the year there were applied 86,031 treatments for the prevention of hog cholera, and 31,401 treatments in the control of hemorrhagic septicemia.

The accreditation of herds as freed from Bang disease seems to be



appreciated by the breeders of purebred cattle in this state. There are at present eight accredited herds comprising 248 animals; 16 applications on file, and a number of herd owners preparing their herds for the test.

Conditions in the Brighton Market have been improved, and rules enforced in July require that every dairy cow admitted to the Sales Barn must have such standing as to be acceptable as an addition to herds under state and federal supervision. Rules and regulations were approved by the governor and council on April 1, 1931, requiring that all bovine animals shipped into the Commonwealth of Massachusetts, if intended for dairy or breeding purposes, must be accompanied by a certificate of tuberculin test qualifying them for admission to any herd under state and federal supervision.

Owing to the large number of applications for tuberculin test received, and the impossibility of keeping up with the demand, it was decided to apply initial tests only in those towns from which a petition for the area test and quarantine had been received. As a result of this ruling such petitions have been arriving at the rate of almost twenty a month, and to December 1, 1931, we have received 164 petitions. Area testing began soon after July 1, and thus far the initial test has been completed in 57 towns, four of which have been declared modified accredited areas and are protected as far as possible from outside infection by quarantine regulations approved by the governor and council. There were 165,633 tuberculin tests applied during the past year, or approximately 45,000 more tests than last year.

#### STANDISH MONUMENT RESERVATION

The season of 1931 showed the largest number of visitors ever recorded at the Monument. These visitors were from all parts of this country, and from various foreign countries. The number of visitors to the reservation was reported as 121,485 by the caretaker. The number of picnic parties has never been as great as this season.

#### STATE FORESTS

During the year 1931 3,557.61 acres were purchased or acquired by gift for our state forests. These acres were thus distributed:—

<i>Name of Forest</i>	<i>Acres</i>
Ashburnham . . . . .	281.48
Brimfield . . . . .	218.4
Erving . . . . .	190.
Federation of Women's Clubs Forest (Gift) . . . . .	591.75
Oakham . . . . .	26.5
October Mountain . . . . .	150.
Peru . . . . .	120.
Sandisfield . . . . .	80.
Savoy Mountain . . . . .	545.
Shawme . . . . .	155.13
Shutesbury . . . . .	354.
Templeton . . . . .	31.25
Warwick . . . . .	508.1
Willard Brook . . . . .	119.
Worthington . . . . .	187.
	<hr/>
	3,557.61

## PART II.

## REPORT OF THE DIVISION OF FORESTRY

The twenty-eighth annual report of the state forester is herewith submitted.

Our personnel has not changed during the past year.

## ORGANIZATION

WILLIAM A. L. BAZELEY, *Commissioner and State Forester*

CHARLES O. BAILEY, *Secretary to the Department*

ELIZABETH HUBBARD, *Head Clerk*

HAROLD O. COOK, *Chief Forester*

D. C. A. GALARNEAU, *Forester in Western Massachusetts*

FRANK L. HAYNES, *Forester, Land Purchase and Surveys*

JAMES MORRIS, *Forester, Nurseries*

ROBERT B. PARMENTER, *Forester, Extension Work*

MAXWELL C. HUTCHINS, *State Fire Warden*

GEORGE A. SMITH, *Chief Moth Suppressor*

JOHN P. CROWE, *Supervising Fire Warden*

*District Fire Wardens*

1. Lincoln Crowell, Sandwich
2. William Day, Wareham
3. John H. Montle, Fall River
4. James E. Moloy, Woburn
5. Frederick R. Stone, Sudbury
6. Joseph L. Peabody, Winchendon
7. Charles L. Woodman, Oxford
8. Albert R. Ordway, Westfield
9. Verne J. Fitzroy, Shelburne Falls

*District Moth Suppressors*

1. Walter F. Holmes, Buzzards Bay
2. Clarence W. Parkhurst, Wrentham
3. Michael H. Donovan, Beverly
4. John J. Fitzgerald, Haverhill
5. Charles E. Mace, Bolton
6. Harry B. Ramsey, Worcester
7. Grover C. Twiss, Holyoke

## LECTURES

The different members of the division have given during the year 65 lectures before various organizations. This number does not include those given by the Extension Forester and listed in his report. The number is not quite as large as in previous years due principally to the fact that during the period of emergency unemployment work the foresters in the department were so busy in supervising this work that they were obliged to refuse to undertake any lecture engagements during February and March.

During the year the Commissioner attended the meeting of the American Fish and Game Protective Association at New York and the meeting of the Northeast Forest Research Council at Newcomb, N. Y. The department was represented at two meetings of the New England Section Society of American Foresters at Providence, R. I. and Hyde Park, N. Y., at a meeting New Hampshire Firewardens at Manchester, Rhode Island Firewardens at Providence, and Connecticut Firewardens at Willimantic.

## EXAMINATIONS

<i>Problem</i>	<i>No.</i>	<i>Acres</i>
Planting . . . . .	21	2023
Improvement Cuttings . . . . .	13	890
Marketing . . . . .	5	403
Insects & Diseases (woodland) . . . . .	6	575
Insects & Diseases (ornamental trees) . . . . .	39	
	<hr/> 74	<hr/> 3891

It is one of the duties of this department to aid private landowners in the care of their woodlands or waste lands by advising them concerning the proper care of such lands. The most satisfactory way to do this is

to personally examine the land or trees themselves. Advice extended by mail or telephone is about as unsatisfactory as having a doctor try to prescribe for a sick patient whom he has never seen, by the same methods. The preceding table gives the number of such examinations made during the year by the Chief Forester and several assistants but does not include such examinations made by the Extension Forester which are included in his personal report under the heading of "farm visits."

### REFORESTATION LOTS

In addition to our state forests this department owns a number of small scattered parcels of land taken over under the old reforestation law. Where these lots are in townships containing state forest land they have been incorporated with the state forest areas but where they exist as scattered individual lots it seems best to refer to them as reforestation lots rather than as state forests because of their small size.

#### *Carlisle-Dewar Lot*

During the winter a small emergency crew made a release cutting in the pine plantation and cut and burned the brush on about 10 acres. An area of 4 acres which was burned by fire four years ago was cleared and in the spring reforested with 5,000 white spruce.

#### *Berkley Town Lot*

This lot of 12 acres with a twelve-year-old plantation was given a release cutting by a small crew of three men and the brush burned.

#### *Freetown-Churchill Lot*

This lot of nine acres which was planted with white pine in 1913 was given a release cutting by the same crew that worked on the Berkley Lot.

#### *Marlboro-Brown Lot*

An emergency crew of twenty men mowed and burned brush along the roadsides and thinned and pruned 20 acres of planted pine. In the spring 10,000 white pine and white spruce were planted in open spots.

#### *Marlboro-Hanson Lot*

The district wardens fire crew of two men used their spare time in the spring planting 5,000 red pine on burned land in this lot.

#### *Hopkinton-Glebe Land*

An emergency crew cleared the brush and dead trees from ten acres of burned land on this lot and in the spring 10,000 white pines were planted on this cleared area. The entire lot was scouted for gypsy moths and the egg clusters creosoted.

#### *Kingston-Jones Lot*

A small emergency crew release cut 40 acres of pine and spruce plantation on this lot.

#### *Montague-Hodgman Lot*

A small crew worked for a short time pruning the Scotch and red pine plantation on this lot and harrowed the plowed fire line.

#### *Montague-Ross Lot*

In the spring 15,000 Scotch pines were planted on this lot.

#### *Nantucket-Civic League*

The fire line around this lot was harrowed and branches pruned from the trees overhanging the fire line. This fire line is used as a bridle path by summer residents of Nantucket and the work done is in part paid for by the local riding club.



*Rowley-Sohier Lot*

A portion of this lot was cleared of brush by an emergency crew in 1930 and the balance cleared this last winter by another crew of six men. In the spring 5,000 white pines were planted on the cleared area.

*Rowley-Killam Lot*

An emergency crew of six men in the winter made a thinning and release cutting on 18 acres of this lot and in the spring planted 2,000 red and 5,000 white pine.

*Lancaster-French Lot*

An emergency crew of eight men during the winter release cut about 50 acres of red and white pine plantation. Unfortunately in the spring a fire which started on adjoining land burned over about 40 acres of this lot including much of the land which had just been released and totally destroyed the plantation.

*Sandwich-Weeks Lot*

The regular crew from the Shawme Forest have carried on some experimental pruning in the red and white pine plantations on this lot and have harrowed the fire line around it.

## NURSERIES

The outstanding feature of our nursery branch in 1931 was the closing of Barnstable Nursery which had been operating continuously since 1914. At one time this nursery had an annual output of approximately 1,500,000 seedlings and transplants which total was gradually reduced coincident with the enlargement of a new transplant nursery established a few years ago on Shawme Forest, located in Sandwich and but a few miles removed from Barnstable. Stock produced in this new nursery will be used almost exclusively in the forest proper and on lower Cape Cod territory. New seed beds have been added to those at Amherst where practically all seedlings will be produced in the future.

Sale shipments fell off about one-third. Economic conditions caused us to anticipate this, so, in the face of general decreased production, we arranged a schedule of state forest planting consistent with that of the preceding year.

Many water departments which in past years have taken large quantities of plants are constantly reporting that their plantable areas have been almost completely reforested. This may mean limiting our production to some extent until more land is added to our state forests. All former reforestation lots are now classed as parts of state forests and are not listed as a separate source of distribution.

*Distribution of Stock*

Sale	736,000
State institutions, etc.	642,000
Town forests	399,000
State forests	1,513,000
	<hr/> 3,290,000

## RECREATIONAL USE OF STATE FORESTS

We are developing our State forest resources for recreational purposes more and more each year. Overnight camping is provided at Mohawk Trail and at Myles Standish State Forests. Permanent camp sites are leased around the ponds on the Myles Standish State Forest. There are about 200 of these lots leased at the present time, on which 167 camps have been actually erected with an estimated value of \$115,000. Tables and benches for picnicking are provided at these places and at Wondsor Jams, Federation of Women's Clubs, Willard Brook, and D. A. R. State Forests. There are also other picnicking grounds on various other forests which are attractive and available. There are two camp

grounds under construction on the Blandford Forest in the town of Chester on land adjoining the new Jacobs Ladder highway. Tables and benches will be erected on observation tower lots in Wellfleet and Acushnet, Rehoboth, Holbrook and Warwick. The tower lots are sightly places much visited by the public.

For location and directions for reaching these state lands we refer the public to our "Brief Guide to the State Forests," a leaflet published annually in the spring.

### STATE FORESTS

The outstanding event in the administration of our state forests was the making available of an appropriation of \$103,000 to aid in relief of unemployment. With this money we employed crews numbering 700 men from 120 towns and owing to the fact that some crews were staggered, i.e. one gang one week and another crew the following week, 1,440 men were given employment from five to ten weeks. Heavy snows in the western part of the state forced us to cease work in that section the latter part of February. One interesting fact in this connection was that out of the \$103,000 only \$3,000 was expended for equipment or expenses and the entire balance of \$100,000 went directly to labor. The nature of the work accomplished by these "emergency" crews is given in detail in the following state forest reports.

We were fortunate this year in regard to fires on state forests. There were about a dozen fires which occurred on the forests but aside from one on the Shawme Forest which burned 400 acres all were very small and did little damage.

Through the authorities at the State Prison we purchased 100 cast aluminum signs in the form of a shield with the state seal and the name of the forest. These have been mounted on posts along main travelled roads where our forests abut on the highway and are attractive and serviceable.

#### *Arthur Warton Swann State Forest*

The policy of making this forest an experimental area was continued by the planting of sample plots of conifers and hardwoods in varying mixtures with varying spacing, and the thinning of pine and spruce plantations. Intensive control of disease and insect pests was continued by removal of weeviled leaders on pine plantations not yet too tall to permit of the work, removal of galls in a small spruce plantation, removal of *ribes* in stone walls surrounding pine plantations and the cutting off of pine branches showing blister rust infections.

With six men paid from the appropriation for emergency work a release cutting was made in a four acre pine plantation and seven acres of old pasture were cleared of brush for planting and four acres of young hardwoods were weeded.

The usual road grading was done and the established roads and trails were brushed and three-quarters of a mile of new road opened.

The lodge and parage were painted and several of the small out-buildings which were not used have been torn down and the lumber preserved.

#### *Ashburnham State Forest*

During the winter the regular crew of two men with the addition of ten more engaged as an "unemployed" crew for a few weeks made a release cutting of plantations on the Rockwood Lot and cleared twelve acres of brush land for planting. In the spring this area was planted with 7,000 white and 7,500 Scotch pines. During the summer the regular crew was engaged in brushing roads and constructing two water holes. During the fall some pruning of pine was done at Corey Lot and a portion of the time was spent in gathering moss for the nursery.

#### *Barre State Forest*

With the help of an "unemployed" crew about 25 acres of land which was burned in the big fire of 1930 was cleared of dead trees and in the



spring this area together with some of the old fields and pastures burned at the same time were planted with 50,000 white and 25,000 red pine. About two miles of forest road were brushed out and a water hole constructed. Because of the fact that a considerable infection of blister rust has been found in this region, we decided to have the state lands in this vicinity thoroughly scouted for *ribes*. As a result of eradication work on the main block of this forest together with the Mixter Lot, there were pulled 7,000 gooseberries, 33,000 skunk currants and 110 red or black currants. This work was done under the direction of Mr. Clave, the County Blister Rust Agent and the Department of Agriculture supplied the foreman for our crew.

#### *Beartown State Forest*

Work on this forest was confined to the brushing of six miles of forest roads and three miles of trails.

#### *Blandford State Forest*

During the winter an emergency crew cleared up forty acres of land burned in the fire of 1930 and also made a roadside thinning about one mile along the Sanderson Brook Road. In the spring 20,000 white pines were set in the cleared area and 15,500 red pines were planted in the area along the new state highway between Chester and Huntington. Because of the construction of this new road this forest now has a frontage of about three miles on the Jacobs Ladder highway.

#### *Brimfield State Forest*

In the winter with an emergency crew, we cleared about eighteen acres of slash and brush land on the Death Hill Road and thinned about twenty acres of young hardwoods along the Wales Hollow Road. In the spring the cleared area just mentioned was planted with 15,000 white and red pine and 5,000 red pines were set in an old field on the state road (King Philip Highway). An old wood road passing through the heart of the forest was given some improvement by filling in wet spots with rocks and gravel and six miles of secondary wood roads were cleared of brush.

During the summer the regular crew carried on blister rust work and eradicated about 15,000 plants. Because of the many old abandoned farms which were once a part of this forest escaped cultivated currants and gooseberries are numerous and this forest will need to be carefully watched.

#### *Clarksburg State Forest*

By use of funds made available by the special emergency appropriation a crew of fifteen men from North Adams and Clarksburg were given work making an improvement cutting in twenty acres of sprout hardwood. The slash was piled and burned.

#### *Colrain State Forest*

The only work done on this forest during 1931 was the mowing of brush along the old North Heath Road and in the various trails through the forest, a total distance of six miles.

#### *Conway State Forest*

In the fall a crew of two men have cleared out the brush and poor hardwoods on two miles of abandoned town road leading through this forest.

#### *D. A. R. State Forest*

During the winter an emergency crew made an improvement cutting in ten acres of culled out hardwood land and cleared twenty acres of grey birch pasture for planting. In the spring 5,000 spruce were planted in the thinned area and 7,000 red pine, 20,000 white pine, and 3,000 Scotch pine were set in the land cleared of brush. During the summer the regular crew brushed out roads and trails. In the fall it became necessary to suspend operations on this forest because of lack of funds.

### *Erving State Forest*

In the winter an emergency crew of twenty-four men cut the wood and burned the slash on 75 acres of land which were burned in the fire of 1930 and in the spring this cleared area was planted with 65,000 white pine, 13,000 red and 3,000 Scotch pine. At the same time 62,000 white and 42,000 red pine seedlings were transplanted in the nursery. During the summer and fall the regular crew of three men were engaged in weeding the nursery clearing and grading roads. Several new roads were opened up. The reservation house has been re-clapboarded, painted and a new chimney built.

### *Federation of Women's Clubs State Forest*

This state forest located in Petersham was given to the Commonwealth in 1930 by the Massachusetts Federation of Women's Clubs. This last winter a crew of eight men hired from funds appropriated to relieve unemployment made a roadside thinning along the New Salem Road for about a mile where it goes through the forest. The old Bancroft Farm was developed into a parking place for autos and a picnic ground. Two pine groves which flank the old fields on either side were thinned and pruned and the old pasture at the back which is naturally stocking with white pine was filled in by planting 5,000 larch, 3,000 white spruce and 1,500 red pines.

Trails were brushed out radiating from this picnic ground to interesting places in the vicinity. On June 3rd the State Federation held a Field Day on this forest and about 400 club members from all parts of the state came to see what their forest looked like and to dedicate a bronze memorial tablet at the entrance to the picnic grounds.

We were fortunate in inducing Mr. A. C. Cline, Assistant Director of the Harvard Forest in Petersham to supervise the work on this forest.

### *Foxborough State Forest*

In December a small crew of men were engaged in brushing out roads and in January and February a crew of fifty "unemployed" men cleared up about ninety acres of land burned over in 1930 and made it ready for planting. During the spring 115,000 white pines were planted on the burned area. After the planting season further work was suspended on this forest.

### *Harold Parker State Forest*

In the early winter the regular crew cleared some 15 acres of brush land along the easterly side of Salem Street and made it ready for planting. In January, February and March a large crew of "unemployed" numbering 80 to 90 men were put to work on this forest. Part of this crew made a release cutting on 50 acres along Spring Brook which was planted with white and red pines about ten years ago. Another portion made a thinning in a hardwood stand along Marblehead Street and a third crew made an improvement cutting along the westerly side of Salem Street, the entire work covering about 120 acres.

During the spring the regular crew of three men supplemented by six extra men set out 10,000 white spruce and 20,000 red pines on land which had been prepared for planting during the winter.

In the early summer the regular crew of three men cut weevil-infested tips of pine from about 200 acres of planted and natural young pine stands. During the late summer and fall the crew, now reduced to two men, mowed fire lines along eight miles of forest roads and made minor repairs to these roads. There were three fires on the forest during the fall, two of which were extinguished before they caused any damage but the third burned about 30 acres of land east of Haverhill Street.

### *Hubbardston State Forest*

In the winter an "unemployed" crew made a release cutting of planted land on the Bent Lot covering 15 acres and another crew of 11 men

cleared about 30 acres of brush pasture land on the Kendall Lot to make it ready for planting. During the spring this and other open areas on this tract were planted with 40,000 white pine, 11,000 Scotch pine and 3,000 Norway spruce.

During the summer two men worked at grading forest roads, built three bridges over Canesto Brook and constructed several water holes.

On the two French lots a blister rust crew under the direction of Mr. Clave pulled 2,077 gooseberries and 46,570 skunk currants. A number of the planted pines on these lots were found to be infested with blister rust.

#### *Leominster State Forest*

Through the early winter the regular crew were engaged in brushing out four miles of forest roads. During January and February an emergency crew of twenty-five men cleared about twenty acres of brush and hardwood growth on the White Lot. During the spring the regular crew planted 15,000 red, 15,000 white and 5,000 Scotch, pines on the forest, 20,000 of which were placed in the White Lot and the remaining 15,000 elsewhere.

In the summer release cutting was carried on in the plantations near No Town Reservoir and also on the Blanchard-Howe Lot, about 40 acres in all.

During the fall the entire crew were laid off for lack of funds and no work was carried on.

There were two small fires on the forest which did not burn over four acres of state land and which did no damage except to three loads of stacked wood and some chestnut posts.

#### *Marthas Vineyard State Forest*

The main work on this forest is the construction of fire lines. During the year the line along the Edgartown-Tisbury road was brushed and plowed for one-half mile. Four and one-half miles of interior fire lines were cleared of brush and plowed, and two and one half miles of forest roads were brushed out. Then miles of old fire lines were harrowed. During the spring 80,000 white, 34,000 Scotch, 2,000 Austrian pine and 10,000 white spruce were planted.

Repairs to buildings included piping water to the Superintendent's house and building a cesspool at the foreman's cottage.

In July the crew assisted in spraying for gypsy moths in Chilmark and West Tisbury. All the white pine plantations were scouted for pine weevil and only two infested tips found on the forest. Most of the work was done by the regular crew of three or four men, but in the winter eight additional men were taken on under the unemployment fund.

#### *Mohawk Trail State Forest*

During a few weeks in the winter an emergency crew of twelve men made a light thinning in the forest growth along the state highway and a release cutting was made in the pine plantation on the Phelps land.

In the summer and fall the tourist camp ground was policed and the capacity of the small reservoir supplying water to the camp was increased by building a small cement dam.

#### *Myles Standish State Forest*

Thanks to the assistance of an emergency crew of forty men during the winter months we were enabled to greatly extend and improve the fire lines on this forest. About fifteen miles of exterior fire lines were widened from 20 to 40 feet. Two miles of fire line 40 feet wide were constructed around Curlew and Rocky Ponds, one-half mile around Fearings Pond, one mile on the north end of College Pond and one and one-half miles built around Charge Pond. A new fire line was built around the Ryan and Long Lots and on the south end of the Mast Road addition. The Hog Rock Road was brushed out for one mile and the Gould's Bottom



Road was brushed out to a width of 40 feet for a distance of one mile. Forty acres of white and red pine plantation on Block No. 17 was given a release cutting. Along the Mast Road for two miles brush was cut to a width of 40 feet.

In the spring 229,000 trees divided as follows were planted, 200,000 white pines, 25,000 Scotch pines, and 4,000 larch, and 120,000 seedlings were transplanted in the nursery.

During the summer and fall the regular crew with the use of the new tractor and road machine plowed and graded 22 miles of fire line along the east boundary and along the College Pond and Fearings Pond roads. This plowing and grading does away with annual mowing of brush and will be gradually extended to take in all the fire lines. About sixty acres of white pine plantations were gone over for pine weevil.

The barn was remodelled inside and the old chimney torn down and replaced.

Among many miscellaneous jobs which might be cited, mention should be made of the fact that assistance was given to six forest fires in neighboring towns.

### *Oakham State Forest*

On the Fullam Lot during the winter, an emergency crew thinned out about 20 acres of mixed hardwoods and pine, producing 187 cords of wood. A pine plantation of five acres was pruned. Near the road every tree received treatment but further back only the crop trees were pruned. Slash was burned as the work progressed.

On the Potter Lot a stand of advanced hardwood which was damaged by ice was cut and an understory of young hardwoods released. In addition to 25 cords of wood this cutting produced 4,500 feet of oak and chestnut logs which were sawed into lumber at a nearby mill.

On the French Lot the red pine plantation was pruned.

Blister rust work was carried on this forest. On the Fullam Lot a regular crew pulled 1108 *ribes* plants, while on the Jacques and Robertson lots a special crew under the direction of Mr. Clave eradicated 2,500 gooseberries and skunk currants.

### *October Mountain State Forest*

*Roads.* During the winter the regular crew supplemented by an emergency crew of 30 men thinned out the hardwood stands along the Washington Brook Roads, the Becket Road and the Watson Farm Road for a distance of about six miles and to a width of from 20 to 100 feet. They also cleared up and prepared for planting nine acres of brush pasture. During the summer the regular crew graded the Washington Brook Road, removed a ledge which had made a dangerous curve in this road, and gravelled bad stretches in the Farnham Dam Road. In cooperation with the County Commissioners considerable work was done to the old Becket Road in the way of graveling and installing culverts. The towns of Washington and Becket have also cooperated in this road work by contributing trucks and gravel. Many miles of secondary roads were mowed for brush.

*Logging.* During December the regular crew carried on an operation involving the cutting of 12,000 feet of ash logs which were sold for \$35. per thousand yarded out to the roadside.

*Planting.* In the spring 20,000 white spruce were used to fill in blanks in older spruce plantations and 8,000 red pines were set in the old pasture mentioned above.

*Slash Disposal.* The slash resulting from the roadside cutting was burned when conditions were suitable.

*Release Cutting.* A pine plantation on the Schumacher tract was given a release cutting.

Among interesting items it may be mentioned that the team of work-horses used on this forest was exhibited at three horse shows and won first prize at Lenox and second at Pittsfield and Great Barrington.

*Buildings.* Minor repairs were made in the superintendent's house and the Felton house was painted.

The superintendent of this forest keeps a very accurate record of the man hours spent on various items of work and the following table is a compilation of this data.

<i>Kind of Work</i>		<i>Hours</i>	<i>Per Cent</i>
Roads, Brush Cutting	Regular	441	14.0
Roads, Brush Cutting	Emergency	754	24.0
Roads, Grading, Bridges, etc.		619	19.9
Logging		137	4.3
Cordwood Cutting		230	7.4
Planting		54	1.7
Brush Burning		245	7.5
Release Cutting		17	.6
Buildings		35	1.2
Care of horses, teams, etc.		17	.6
Care of trucks		6	.2
Care of equipment, tools, etc.		31	1.0
Care of grounds around buildings		29	.9
Haying		73	2.3
Cultivating land		35	1.2
Holidays		44	1.4
Illness		14	.4
Patrol: Fire and Hunting		43	1.4
Superintendent		311	10.0
		3,135	100.

#### *Otis and Sandisfield State Forests*

On the Webb-Gorham lot a small emergency crew made a roadside thinning along the Otis-West Otis Road for about one mile and for two miles along the West Otis-Coldspring Road. During the summer the District Fire Warden's regular crew mowed the small brush in the area thinned during the winter.

#### *Otter River State Forest*

During December a crew of five men worked brushing roads and fire lines and making a release cutting in the plantations along Miller's River.

After the middle of January an emergency crew of sixteen were put to work clearing twenty acres of brush and weed hardwoods along Miller's River. After five weeks, the work was suspended on account of the deep snow. During the winter many poor people in the vicinity were given an opportunity to cut dead wood on the area burned by the fire of 1930 and a large part of this area was in this way cleared for planting.

In the spring this burned land and other areas on the forest were planted with 55,000 Scotch pine, 97,000 white pine, 23,000 red pine, 6,000 Norway spruce, and 1,500 Japanese Black pine.

At the same time 110,000 two year seedlings were transplanted into the nursery.

The regular forest crew and the fire truck aided in extinguishing several small fires in the neighborhood of the forest.

During the summer the regular crew now reduced to two men worked on forest roads and the railroad fire line. In the late fall the two men were sent to Petersham where they made a weeding on the Mann Lot.

The reservation house was painted.

Mr. Powell who has been superintendent of this forest for five years resigned to accept a position in the New York Conservation Department and Mr. Raymond Wilder, former superintendent of this forest, was placed in charge.

#### *Savoy Mountain State Forest*

A small emergency crew cut 96 cords of wood which had been damaged by ice and this was sold stacked on the lot at \$4.00 per cord.

There is no regular crew employed on this forest but the observer in the Savoy tower is employed on the forest during those seasons when there is no fire hazard. This man with occasional help has during the year released 150 acres of plantations taking out wild cherry, grey birch, and other weed hardwoods. About four miles of forest roads have been repaired by clearing ditches and culverts and filing in ruts. Brush was mowed on seven miles of forest roads.

#### *Shawme State Forest*

With the aid of an emergency crew during February and March five miles of fire lines were brushed and one and one-half miles of this was later plowed. Five miles of forest roads were cleared for the first time and 20 miles previously cleared were rebrushd. Along the Forestdale Road, 18 acres were cleared of sprout oak for planting and a 22 acre block was similarly cleared and divided into 15 blocks as an experimental planting area.

During the spring the cleared areas just mentioned and 200 acres of burned scrub oak land were planted with 63,000 white pines, 110,000 white spruce, 92,000 Scotch pine, 4,000 larch, 3,000 Norway spruce, and 2,000 Japanese Black pine.

A release cutting was made on 275 acres of older plantations. At the headquarters house a new chimney was put in and a new hose-drying rack constructed.

A forest fire starting near the Canal burned nearly 400 acres of this forest but as the burned land had not been planted and was covered only with scrub oak practically no damage resulted.

#### *Shutesbury State Forest*

For a few weeks in the winter a small crew was employed on the Cutter Lot release cutting natural pine stands and taking down scattered "wolf" trees. All brush was piled and burned.

#### *Spencer State Forest*

On the Chestnut Hill Lot during December 430 Christmas trees, balsam firs, were cut and sold for an average price of 43 cents yarded out to the roadside.

On the Dimock Lot which was burned over in 1930, the dead wood was sold standing, and an emergency crew cleared and burned the slash. There is still a large area of brush pasture which was burned on the east side of the road which needs to be cleared and planted. In the spring 20,000 white pine were planted on the cleared area.

#### *Sutton State Forest*

This forest adjoins the state reservation which is known as Purgatory Chasm. An emergency crew cleared 25 acres of poor hardwoods and in the spring 25,000 white pines were planted on the cleared area.

#### *Templeton State Forest*

In the spring 13,000 white pines were planted on the Hadley-Aiken Lot and during the summer a crew of two men brushed out and repaired forest roads in the Templeton Town Lot and Davis-Hadley Lots and release-cut and pruned some of the planted pines on the Town Lot. After August all work was suspended on this forest.

#### *Tolland-Granville State Forest*

*Granville Section.* During the early winter the regular crew of two men cleared up four acres of brush pasture and prepared it for planting. Later, on account of deep snow, operations were changed to cutting large spreading hardwoods along the walls bordering the plantations. About 40 acres of pine plantations were given a release cutting. During the summer ten miles of roads were mowed and the telephone right-of-way similarly cleared. Trails were cut through the pine plantations by prun-



ing off side limbs on the trees along the trails. Pine plantations with their limbs extending to the ground are extremely difficult of access unless such trails are cut through them. A few minor repairs were made to the two houses on this forest.

In the fall the main roads were repaired by cleaning ditches, installing two culverts and filling ruts with gravel.

*Tolland Section.* Observer Werden of the Tolland Tower, at times when he was not on the tower, mowed out the trail to the tower one mile, brushed the telephone right-of-way for three miles and mowed the roadsides where the East Otis Road passes through state forest land.

#### *Warwick and Mount Grace State Forests*

An emergency crew of fifteen men carried on a release cutting on 40 acres of natural pine reproduction on the Leason-Martin Lot. When the snow became too deep for this kind of work they were transferred to the Mount Grace State Forest where they made a roadside thinning on the Northfield Road.

The observer on the Mount Grace tower, during the summer and late fall when he was not needed on the tower, with the help of one man mowed the mountain trails and the brush on both sides of the Winchester and Northfield Roads. They also carried on a release cutting and weeding in New England Box lot on the east side of the Winchester Road.

#### *Wendell State Forest*

In the early part of the winter a crew of six men made a release cutting in Scotch pine and white pine plantations at the southeast corner of the forest. The latter part of January two emergency crews, one of 17 and the other of 10 men were put to work on the forest for about four weeks. Th first crew cleared up a brush pasture of 25 acres on the Wickett Brook Road and the second crew made a thinning and release cutting in a natural pine stand on the Ross Lot near the northwest corner of this forest.

In the spring the cleared area and adjacent land was planted by the use of 30,000 white pine, and adjacent land was planted by the use of 30,000 white and 9,000 Scotch pine.

During the summer and fall the regular crew worked chiefly on forest roads cutting brush, repairing bridges, etc.

#### *Westminster State Forest*

For a short period in the winter an emergency crew of six men was given work making a release cutting on the Fenno Lots and some large "wolf" trees were cut and made into cordwood and the brush burned.

#### *Willard Brook State Forest*

During the winter the regular crew of three men supplemented by an "unemployed" crew of 36 men made a light thinning along the state highway and around the Hosmer house, and cleared up 26 acres of sprout land that was burned over three years previously. In the spring this cleared area and other brush land on the forest was planted by the use of 20,000 white spruce and 25,000 white pine.

They also salvaged considerable dead chestnut, the cutting resulting in the production of 150 poles, 100 posts and about 10,000 feet of lumber. The poles have been used on various fire tower telephone lines, part of the lumber was used to make picnic tables for various state forest camp grounds and the balance is stored in the Hosmer barn. The posts were used for the new metal state forest signs described in the first part of this report.

This forest is probably visited by more people than any other in our possession. For this reason provision must be made for parking space for cars, fire places for picnic parties, and toilet facilities. The State Highway Department will rebuild the state road during the summer of 1932 and it may be well to postpone these improvements until after this work is completed but they should not be delayed much longer.

*Windsor State Forest*

The only work done on this forest was that of mowing brush and grass at the picnic grounds at the Jambs. During the summer a man was kept at the Jambs on Saturdays and Sundays to police the grounds.

*Present Acreage of State Forests*

<i>Name of Forest</i>	<i>Acreage</i>
Arthur Warton Swann	986.75
Harold Parker	1,399.85
*Myles Standish	8,869.
Otter River	1,816.835
Savoy Mountain	8,403.38
Ashburnham	1,530.555
Barre	582.125
Bash Bish	390.08
Beartown	7,613.78
Blandford	1,734.8
Brimfield	1,599.8525
Campbell's Falls	2.6
Clarksburg	1,864.
Colrain	1,206.194
Conway	1,563.12
D. A. R.	1,020.
Erving	4,626.565
**Federation of Women's Clubs	599.75
Foxborough	662.2412
Hawley	2,410.7
Hubbardston	811.37
Huntington	441.
Leominster	1,890.3563
*Marthas Vineyard	4,472.75
Mohawk Trail	5,419.86745
Monroe	4,116.68
Mount Grace	1,065.825
Northfield	235.4875
Oakham	828.55
October Mountain	13,802.6
Otis	3,201.81
Oxford	28.7
Peru	1,708.
Petersham	248.15
Pittsfield	1,155.84
Sandisfield	3,974.59
*Shawme	8,370.12
Shutesbury	992.36
Spencer	650.525
Sutton	362.7715
Templeton	640.625
Tolland-Granville	4,682.25
Warwick	1,791.34
Wendell	4,966.46
Westminster	342.45
Willard Brook	590.46375
Windsor	1,450.05
Worthington	412.
Unassigned	1,093.325

---

118,628.4942

\* Includes takings.

\*\* In process of acquiring.

## REPORT OF EXTENSION FORESTER

The chief problems of the Extension Forester this past year were as follows:

1. Thinning young stands and partly grown stands of hardwood or pine so that a crop of the best grade of timber or cordwood may be produced, and produced as often as possible. Time is the essential factor in this part of the farm holdings and this thinning will so speed up the growth that an income may be had at shorter intervals than under the cut and slash system. It is absolutely necessary to prune the lower limbs of pine so as to allow the tree to produce clear lumber as it expands in diameter. A few selected trees are recommended for this practice, this operation to go along with the thinning. The market today is fussy and clear lumber will produce an income where other quality will go begging.

2. Liberating all good species from overtopping and interfering hardwood sprouts or seedlings. Many woodlots are fast losing their ability to produce any woodland crop at all due to the shipping and suppression of the good trees by the worthless weeds. Treatment afforded a piece of woodland in this state is not different from that which the average farmer gives his weedy potato patch.

3. There are approximately 1,000,000 acres of forest land in the state that come under the heading "Idle Land". A certain portion of this is on every farm in the state and many more acres are falling into this class as a result of the efforts for better pasture improvement. Payment of taxes and income from the investment makes it advisable to place this acreage in trees.

4. A survey of the market conditions is still being made, a continuation of last year. This year the small sawmills are being studied for prices paid for logs, whether of inferior quality or of the better quality in order to tie this information up with the high quality lumber market. Quality is in demand in all commodities, and especially will create a market when other conditions are adverse.

*Teaching Plan and Methods: Roadside Demonstration Plots.* These roadside demonstration plots are still doing service, but have not brought the response desired. It was hoped that those interested would communicate with the County Agent and thereby we would get a line on the farmers.

*Farm Visits:* During the year the Extension Forester has made 126 farm visits. At each place he has discussed with the owner the problems confronting him and the best remedy recommended. These individual visits are by far more productive of results than the field demonstrations. These individuals can be made demonstrators and the work will spread.

*Circular Letters:* A set of four circular letters on woodlot improvement have been sent to a list of 2700 people. Others will be prepared to meet the other phases of the work.

*News Notes:* Articles have been prepared and sent to the county papers and the local papers.

*Lectures:* At the annual conference last year, the theme was "How to meet more people." This year the Extension Forester has spoken to 45 groups of people with an attendance of 2125.

*Conferences:* The Extension Forester has attended 29 conferences which were attended by 4175 people. The work in all its phases was discussed at every meeting.

*Report Cards and Records:* In the past it has seemed to the Extension Forester that a great deal of work has been accomplished all over the state but there was no way to check up on it. The following report card was devised and sent to the Blister Rust Agents in the field. They are in close contact with the woodland owners and they are able to help me materially.



Name of owner .....

Address .....

No. acres weeded .....

No. acres thinned .....

No. acres of pine pruned .....

Owner is following an annual cutting program.....

is not .....

Reports by .....

Date

*Radio Talks:* Three radio talks have been prepared and delivered on the following subjects:

1. Forest Weeding.
2. Farm Forest By-Products.
3. Management of Weeviled Stands.

*4H Forestry Club Work:* A great deal of time has been given to 4H Forestry Club work because it has created interest among the Juniors who will teach the parents how to handle their own woodlots.

*Correspondence:* This means of interesting the public and selling the major points of the project has had its place. The Extension Forester has written 355 letters dealing with all the phases of forestry. Follow-up visits have shown this information to be used.

#### REPORT OF THE FORESTER IN WESTERN MASSACHUSETTS

The following is a brief report of the forestry work pursued through the West Springfield office of the Division of Forestry during the fiscal year ending November 30, 1931.

Through the courtesy of the Hampden County Improvement League, as in the past, adequate office space was provided, without charge, in its building at West Springfield.

#### *Forest Type Surveys*

In 1931 both the field and office work relative to forest type surveys on state forests were somewhat restricted, because of requests for type surveys on town forests and for special surveys and data required by the Boston office. With the completion of the 1931 field season, the bulk of the state forest lands in the western district has been typed. Typing of portions of Savoy Mountain State Forest has been held in abeyance for some time, awaiting the probability of closing, by purchase, the space between the present state-owned parcels; also a few small scattered lots, for which boundary surveys are not yet available, remain to be typed in this district. After completing the Monroe State Forest, the type survey work was extended further eastward and into Worcester county where the Leominster, Willard Brook, and Federation of Women's Clubs State Forests were the largest single areas covered. Segregated small lots and so-called reforestation lots in the towns of Erving, New Salem, Northfield, Orange, Shutesbury, and Warwick in the western district, and Ashburnham, Fitchburg, Hubbardston, Princeton, Templeton, and Westminster in Worcester county were typed. This completes the typing in these towns for which boundary surveys are available, and covers all, or the major portions of the state-owned lands in these towns.

In 1931 field work was conducted on 10,095.41 acres of state forests. Further, an additional 499 acres within the purchase area of the Federa-

tion of Women's Clubs State Forest was typed, and since a fire swept the main block of the Barre State Forest, this area of 443.61 acres was re-typed. A total of 79,937.7 acres of state forest lands has now been covered by original type surveys since 1924. A lot of 188.4 acres adjoining state land typed in 1929 was lately purchased, and this acreage has been included in the above total.

During this year 95 maps from finished tracings were colored for the Boston office, for this office, and for distribution to the district wardens and superintendents controlling their respective areas. In addition to the fully colored maps, the types on a set of 58 maps were outlined in color for the Chief Forester's file for use in the field. Twenty-five more colored maps covering 18,567.7 acres were submitted, bringing the total to 58 maps representing 62,477.93 acres now in the forest type atlas in the Boston office.

We have on hand 17,459.77 acres of state forest typing and 942.61 acres of additional typing for which finished field maps are now ready for final tracing. Since the making of the early maps data has been gathered which should be affixed to these maps.

Information compiled from the forest type survey records was furnished to the Northeastern Forest Experiment Station for use in connection with the Massachusetts section of the "Capper Report", which report is being revised by the Federal Government.

### *Extension Forestry*

The service rendered to individuals, organizations, schools, towns, and cities continues to be an important factor in the work of this office. During the year there was an increased number of requests for advice and instruction in forestry practice other than planting. Several requests from new sources and some old projects were held in abeyance, on account of the present economic situation.

A new feature of forestry, reclaiming badly weeviled white pine plantations by combining pruning and girdling, was introduced. The first two plantations in the state of relatively large size, 50 acres each, to be treated in this manner are located in this district.

The outstanding forestry undertakings by a private individual continue to be those in progress by Mr. F. G. Crane, Jr., on his holdings in Dalton. Mr. Crane has added the newly recommended method of reclaiming badly weeviled white pine plantations. The work being done on a fairly large area in Southampton by Mr. Clinton Bell is another example of practical forestry in this district.

Cooperation was extended to several organizations in the following manner: to the Westfield River Parkway Association as directed and as member of the recreational areas committee; as a member of the Springfield Chamber of Commerce and the Hampden County Improvement League forestry committees; as a member of the executive committee and chairman of the forest areas committee of the newly former Regional Planning Council to consider developments in Hampden, Hampshire, and Franklin counties; and as adviser in connection with the Highway Beautification contest sponsored by the Springfield Union. Assistance was given to the Girl Scouts and the Boy Scouts of Springfield and Pittsfield.

Through the efforts of the Club Agent of the Hampden County Improvement League and under the guidance of the State Extension Forester, five 4-H Forestry Clubs with 41 members were organized in Hampden County. These are the only clubs of this kind in this district. Alton Nixon, 14 years old, of Tolland, was awarded the medal for the best woodlot improvement project in the state.

The Springfield School Department under the direction of the Supervisor of Nature Study extended its nursery study project to include ten elementary schools. Planting stock for the purpose was purchased from the Northeastern Forestry Company of Cheshire, Connecticut, from funds made available by the Parent-Teachers Associations.

Several towns and cities in this district continued their activities on town forests, watersheds, or fire district lands, and in parks. While planting was the main project, in some cases opportunity was taken to extend the work to other forestry lines by using the unemployed, and much was accomplished which otherwise might never have been undertaken. Forest type surveys and re-surveys covering about 600 acres were made for the town forests in Norton, Plainville, Scituate, Sharon, and Walpole. Five-year plans for the development of these areas are under way.

Concern has been expressed relative to the Japanese Beetle quarantining in Hampden County. The Federal Government has conducted road patrol, scouting, trapping, and cooperative soil treatment, and as a result the towns in the central portion of the county have been placed in the generally infested area. This means that the state or towns will be directly responsible for future work therein.

The annual forestry exhibit at the Eastern States Exposition at West Springfield, September 20-26, was planned and constructed, as usual, under the supervision of this office, and occupied the forestry wing of the Massachusetts Building. This was said to have been one of the finest forestry exhibits ever shown. The principal feature displayed what forest trees provide. Stress was placed on unusual articles not commonly associated in the public mind as produced from wood or trees, and more commonly known articles were used as a background. There were over 700 individual pieces in the exhibit, and in some cases the steps in the manufacture were shown from the raw material to the finished product, such as paper, rayon, fiberoid, rubber, cork, shoe lasts, tennis racket, etc. Credit is due to 60 manufacturers for the loan of material for the success of this exhibit. Another main feature was an exhibit depicting the pruning of white pine for profit. Trees, photographs, cross sections and boards cut from a pruned log were used to show how and where to prune, and the results to be expected. Further, the large relief map of Massachusetts and a section of a forest tree nursery were included to make up the general forestry exhibit which was visited by over 200,000 persons.

A small exhibit was set up at the Tri-County Fair, Northampton, October 6-8. Unusual articles made from wood or trees were shown.

During 1931 photographs and data relative to the construction of our exhibits were furnished to the Pennsylvania Department of Forests and Waters, to the Indiana Extension Forester, and to the Chattanooga Tennessee Garden Club. Exhibit material was loaned to this latter organization. Exhibit material was also loaned to the Springfield School and library.

#### REPORT OF THE STATE FIRE WARDEN

MR. WM. A. L. BAZELEY, *State Forester*.

SIR: In compliance with the provisions of section 26, chapter 48 of the General Laws, I submit herewith a report of the work accomplished by this branch of the division during the past year.

We have had a very favorable fire year. Our number of fires shows a very marked decrease over former years. Many of them were of a serious nature but were checked by the efficient work of our wardens with the cooperation of our district men and their crews. Our power equipment has again proved very valuable in the control of fires and several additional towns have equipped their forest wardens with such equipment. It is also interesting to note that many cities and large towns maintaining regular fire departments are carrying small portable pumps of various types and are using them to advantage on forest and brushland fires.

The compulsory patrol law that became effective this year was complied with by 141 towns. These towns maintained a patrol on Saturday, Sundays and holidays and without doubt prevented many disastrous fires.



I anticipate that many additional towns will take advantage of the act this coming year. I feel confident that towns adopting the patrol system will reduce their fire losses and expenses for extinguishing very materially as this has been the experience of many towns that have carried on such a system during former years.

The Barnstable County patrol was continued again this year with good results. Two patrolmen were on duty during the season traveling 26,647 miles, interviewing 6,655 people. They apprehended 25 violators of the law and attended 42 fires.

The new law relative to the discarding of burning matches and smoking material adjacent to or within forest lands was enforced this year for the first time. We received the hearty cooperation of the town and State police in the enforcement of this act. This law provides a \$25 penalty for throwing burning matches or any burning smoking material from automobiles while adjacent to forest lands. Our records show that while formerly forty per cent of our fires were roadside fires this percentage was reduced to twenty-six per cent this year. We shall carry on a very extensive campaign this coming year in hopes that we may reduce roadside fires to a minimum.

This has been a favorable year for carrying on construction and repair work and a large number of our towers have been repaired and repainted, the telephone lines rebuilt, new poles installed and new wire put up where necessary. The old tower in Rehoboth was replaced with a new galvanized iron tower 68 feet high. The new tower in Granville covering the Springfield and Westfield watersheds was completed and painted. This tower is maintained by these two cities and is a very desirable addition to our fire lookout system. The tower on October Mountain State Forest was repaired and placed in operation during the fall months.

I hope that we shall be able to erect three new towers next year; one on the Myles Standish State Forest replacing the old tower now there; one on Tower Mountain in Savoy replacing the old one that has been in use for many years and which should be removed; one on the Wilbraham range in the town of Wilbraham. This is a new location and will cover a vast forested area that is not receiving protection at this time.

Our observation towers have become very popular with the traveling public. Over 100,000 people visit them annually coming from every State in the Union and nearly all the foreign countries. These towers are equipped with stairs and in many instances automobiles may be driven right to the base of them. In all other cases a good trail is provided.

We have been extremely fortunate in having few fires on our State Forests this year with very little damage. We are using every precaution to protect these holdings by clearing out old roads, locating water holes and making them accessible, constructing fire lines where necessary and having sufficient equipment and men available for use, and during dangerous periods carrying on a system of patrol. On the Myles Standish, Shawme and Marthas Vineyard State Forests we are putting in an extensive system of roads and fire lines in the hope that we shall be able to control any fires that may endanger these forests.

The nine forest warden organizations are doing a notable piece of work. Their cooperation with this department has been very gratifying. These organizations now have a total membership of about 1500, made up of men interested in fire protection and forestry. A booklet entitled "Suggestions to Forest Wardens" has been prepared by a committee from the various organizations in cooperation with the Massachusetts Forestry Association and this department. This booklet is instructive and gives a great deal of helpful information to the forest warden and his deputies. This will be ready for publication by March first. Organization meetings are held monthly and are well attended with always a good speaker and a live topic for discussion. In behalf of this department I desire to express to the officers and members of these organizations our

sincere appreciation of their cooperation and the loyal support given us in the work.

Owing to insufficient funds we were unable to hold our forest fire conferences throughout the State as in former years. These meetings are very instructive and I hope they may be continued again this year.

We have again received the cooperation of the United States Weather Bureau in furnishing us with daily weather forecasts during the season. Mr. T. E. Reed, who has charge of this branch of the service, has rendered us very efficient service.

We are indebted to Mr. E. B. Rideout of WBZ and Mr. E. J. Rowell of WEEI for their cooperation in giving out the Forest Fire Weather Forecast in their daily broadcasts. This service was appreciated by us and also by the forest wardens throughout the State.

The Federal Forest Service under the direction of Mr. C. R. Tillotson has cooperated with us again this year. This assistance comes under the Clark-McNary law and our receipts for the year from the Forest Service were \$25,761.29. We appreciate the valuable services rendered by Mr. Tillotson.

The following tables show the comparative damages, costs, etc. for the past three years.

Respectfully submitted,

M. C. HUTCHINS,

*State Fire Warden.*

#### FOREST FIRES FOR THE PAST THREE YEARS

Year	Number of fires	Acreage burned	Cost to extinguish	Damage	Average acreage per fire	Average damage per fire
1929	1,198	16,569	\$31,836.00	\$67,731.00	13.83	\$56.54
1930	1,922	72,988	122,478.00	309,662.00	37.97	161.11
1931	1,195	19,510	34,629.00	96,877.00	16.33	81.07

#### TYPES OF CLASSIFIED DAMAGES

	1930	1931
Standing trees	\$131,640.00	\$26,771.00
Logs, lumber, cordwood	128,953.00	43,703.00
Buildings	38,585.00	22,587.00
Bridges, fences	852.00	87.00
Sproutland	9,632.00	3,729.00
Total	\$309,662.00	\$96,877.00

#### TYPES OF LAND BURNED OVER (ACRES)

	1930	1931
Timber	13,997	3,358
Second growth	31,841	6,657
Second growth, not merchantable	13,951	3,864
Brush land	9,632	3,729
Grass land	3,567	1,902
Total	72,988	19,510

## FOREST FIRES OF 1931

<i>Months</i> 1930	<i>Number</i>	<i>Acreage</i> <i>burned</i>	<i>Cost to</i> <i>extinguish</i>	<i>Damage</i>
December	10	37	\$73.00	\$1,255.00
1931				
January	2	9	13.00	275.00
February	6	12	79.00	3.00
March	102	275	885.00	306.00
April	702	14,854	23,306.00	83,746.00
May	192	2,627	5,249.00	8,166.00
June	18	63	223.00	188.00
July	27	164	464.00	165.00
August	14	187	1,080.00	241.00
September	4	6	35.00	17.00
October	68	843	2,356.00	1,847.00
November	50	433	866.00	668.00
Total	1,195	19,510	\$34,629.00	\$96,877.00

## CLASSIFIED CAUSES OF FOREST FIRES, 1930-1931

	1930		1931	
	<i>Number</i>	<i>Per Cent</i>	<i>Number</i>	<i>Per Cent</i>
Railroad	309	16.08	119	9.96
Smokers	728	37.87	407	34.06
Unknown	233	12.12	201	16.82
Brush burning	200	10.41	170	14.23
Incendiary	156	8.12	69	5.77
Children	128	6.66	163	13.64
Other causes	168	8.74	66	5.52
Total	1,922	100.00	1,195	100.00

## RAILROAD FIRES OF 1931

<i>Railroad</i>	<i>Mileage</i> <i>of track</i>	<i>Number of</i> <i>locomotives</i>	<i>Number</i> <i>of fires</i>	<i>Average</i> <i>burned</i>	<i>Cost to</i> <i>extinguish</i>	<i>Damage</i>
New York, New Haven and Hartford	1,906	957	39	183	\$1,017.00	\$960.00
Boston & Albany	974	318	20	155	502.00	1,014.00
Boston & Maine	1,923	784	60	474	1,567.00	3,180.00
Total	4,803	2,059	119	812	\$3,086.00	\$5,154.00

## REPORT OF THE SUPERINTENDENT OF MOTH WORK

MR. WM. A. L. BAZELEY, *Commissioner*.

SIR: The situation which developed at the time of the heaviest feeding of the gypsy moth this year was just about what might have been expected from conditions last year. The area north of Boston in Eastern Massachusetts was comparatively free from feeding, though there is a general light infestation. The area south and southeast of Boston and the Cape Cod District was more heavily infested, and showed partial stripping in some localities, with complete stripping over considerable acreage in midsummer. Over the rest of the state as far as Berkshire County there was what might be termed a light and scattering infestation, but this fall shows an increase of healthy egg-laying. However, we do not anticipate any serious defoliation next year in this section, as the territory has been thoroughly inspected, and all egg clusters found, creosoted.

The maintenance of the present good condition over this part of the state, however, will depend largely upon the appropriations made by the various towns and cities the winter and spring of 1932. The present trend toward economy in municipal finances should not be allowed to



influence the appropriations for gypsy moth and browntail moth suppression. If the work can be prosecuted with vigor, the present good condition can be maintained. The work of suppression of the gypsy moth in Berkshire County is all conducted by the Federal Government, a summary of whose work is appended to this report.

Over 24,960 acres of partial stripping occurred, while 32,765 acres were practically defoliated. The towns in which defoliation occurred are Barnstable, Bourne, Brewster, Carver, Chatham, Falmouth, Harwich, Kingston, Marion, Mashpee, Mattapoisett, Middleborough Pembroke, Plymouth, Rochester, Sandwich, Tisbury, West Tisbury, Wareham, Yarmouth, Acushnet, Attleboro, Berkley, Dartmouth, Dighton, Fall River, Freetown, Rehoboth and Taunton.

The brown-tail moth infestation was light, with the exception of Plum Island, and the towns of Newbury and Essex. Some striping by this caterpillar was noted in these localities.

I wish to call attention to other insect pests which were very abundant this year. The imported elm leaf beetle (*Galerucella luteola*) returned in large numbers and many fine trees were stripped during its feeding seasons. The satin moth (*Stilpnotia salicis*) on willow and poplar, the oriental hag moth (*Cnidocampa flavescens*), the cottony maple scale (*Pulvinaria innumerabilis*), the tent caterpillar (*Clisiocampa americana*) and the fall web worm (*Hyphantria cunea*) were very prevalent. A new imported insect was found in several towns and cities, the beech scale (*Cryptococcus fagi*). The saddled prominent (*Heterocampa guttivitta*) again appeared in northern Berkshire County, but another year there will probably be a cessation of this insect's attack.

If the elm trees of this state are to be saved from such destruction as occurred a good many years ago, when the elms in Harvard College Yard in Cambridge suffered, prompt action in spraying at the right moment should be taken by all towns and cities that prize their beautiful elms. Spraying will control the satin moth, the oriental hag moth, the tent caterpillar and the fall web worm if done at the proper time.

The usual good work was done on the North Shore, all funds for this work being provided by private subscription through Col. Sohier, the City of Beverly and the Town of Manchester also contributing. The state aided in this work by furnishing supervision and clerical work.

#### NORTH SHORE FINANCIAL STATEMENT

Balance from 1930 . . . . .	\$2,742.72
Receipts:	
Interest on bank deposit . . . . .	12.30
Dept. of Public Works . . . . .	175.83
Town of Hamilton . . . . .	4.50
Supt. of Buildings . . . . .	11.90
Wm. D. Sohier . . . . .	216.65
Town of Manchester . . . . .	1,000.00
City of Beverly . . . . .	999.91
Wm. D. Sohier, Agent . . . . .	2,000.00
State Forester . . . . .	20.00
Interest on Bank Deposit . . . . .	3.80
Dept. of Public Works . . . . .	115.00
	<hr/>
	\$7,302.61
Expenditures:	
Pay roll . . . . .	\$2,898.91
Rent . . . . .	390.00
Telephone . . . . .	46.56
Travel . . . . .	16.37
Supplies . . . . .	267.99
	<hr/>
	3,619.83
Balance carried to 1932 . . . . .	\$3,682.78

I append reports submitted to me by Messrs. A. F. Burgess, in Charge of Moth work for the U. S. Plant Quarantine and Control Administration and C. W. Collins, in Charge of Gypsy Moth and Browntail Moth Investigations, U. S. Bureau of Entomology.

Respectfully submitted,

G. A. SMITH,  
*Superintendent of Moth Work.*

FEDERAL GYPSY MOTH AND BROWN-TAIL MOTH WORK  
IN MASSACHUSETTS, 1931.

By A. F. Burgess

The areas under quarantine in Massachusetts on account of the gypsy moth and the brown-tail moth have not been changed during the year, but several towns in Berkshire County were placed under quarantine on account of the satin moth. This insect is spreading so that at the present time the entire State with the exception of a few towns in Berkshire County, is infested.

The volume of shipments of materials requiring inspection under the gypsy moth and brown-tail moth quarantine was not as great as during the previous year. This was particularly true in the case of fall shipments of nursery stock. An unusually large number of small orders had to be inspected, however, so that there was very little difference in the number of certificates that were issued.

Defoliation records were secured during the summer in cooperation with the State Department of Conservation, the acreage affected being somewhat greater than in 1930, the most severe defoliation occurring in the southeastern part of the State.

The scouting of woodland in Berkshire County was completed during the year. This formed a part of a general plan of woodland scouting in the Barrier Zone in which the States of Connecticut, New York and Vermont, as well as Massachusetts, are involved. The Massachusetts portion of the Zone is relatively free from infestation with the exception of the southern portion of Berkshire County. During the year, 62 infested locations were found. Most of them were scattered over rather large areas of woodland. Aside from carrying on the necessary clean-up work, over 2,000 acres of this infested woodland were sprayed. The number of locations found was slightly less than during the previous year, but as most of the old infestations had been thoroughly treated and were found to be free from the insect when the scouting was carried on in 1931, it was evident that wind-blown larvae must be coming in from areas more generally infested to the east. Evidence that this was happening was shown by the records secured from assembling cages, which are used for attracting male moths. There was a striking increase in the number of moths captured in these cages in 1931 over the catch obtained for the previous year. It is apparent that recent wind-spread of small larvae is responsible for scattered distribution of the pest in many of the towns in the southern part of that County. The existing infestations will require very intensive clean-up measures, and this work should be supplemented by scouting and the elimination of infestations east of the Zone.

NATURAL ENEMIES OF THE GYPSY MOTH AND THE BROWN-TAIL  
MOTH IN MASSACHUSETTS

By C. W. Collins, U. S. Bureau of Entomology.

Judging by the results obtained from sample collections of eggs, larvae, and pupae of the gypsy moth the percentage of parasitism for all these stages was somewhat lower in 1931 than it was in 1930. Calosoma beetles were also less abundant in 1931 than they were during the preceding year. Taking the New England area as a whole the

gypsy moth is at present at a low-ebb, the extensive areas of heavy defoliation during 1931 being confined to Barnstable, Plymouth, and Bristol counties in Massachusetts. It is generally true that parasitism is lowest when the host insect is most scarce, so the lower percentage of parasitism in 1931 was to be expected.

In Massachusetts the brown-tail moth continues to be a pest only in a few localities in the eastern part of the State. Collections of summer larvae showed a slight increase in parasitism in 1931, compared with records secured in 1930, while parasitism of the hibernating larvae remained about the same.

The importation from Europe of parasites of the gypsy moth has been continued. No additional species are known to have become established during the year, but it is of interest to note that a tachinid fly was again recovered from one locality (Boxford, Mass.) where it was put out in 1927 and 1928. Although this parasite, which is an important enemy of the gypsy moth in Europe, has not been recovered from other points where it has been liberated, it has been able to persist in this one locality, and this year an unusually large number were imported for liberation in other sections of New England.

A resumé of the introductions of natural enemies of the gypsy moth and brown-tail moth during the past twenty-five years shows that 11 of the imported species have been successfully established and have demonstrated their utility by reasonable multiplication and control results. Four others are apparently established but remain of doubtful utility. Two of the established species have become important enemies of the satin moth in New England and one is known to attack approximately 125 native American insects.

## APPENDIX

### FINANCIAL STATEMENT

#### *Receipts and Expenditures for Year ending November 30, 1931*

Purpose of Appropriation	Amount	Balances	Net Expenditures	Balance to 1932	Balance to Treasurer
Salary of Commissioner . . .	\$6,000.00	—	\$6,000.00	—	—
Expenses of Commissioner . . .	250.00	—	68.19	—	181.81
Administration—Services . . .	1,600.00	—	1,206.00	—	394.00
Administration—Expenses . . .	4,000.00	—	1,841.28	—	2,158.72
Personal Services . . .	14,500.00	—	14,365.00	—	135.00
Office Incidentals . . .	9,035.00	—	7,536.24	—	1,498.76
General Forestry and Nurseries . . .	15,000.00	—	14,831.15	—	168.85
Purchase and Planting of Forest Lands . . .	2,000.00	—	1,984.65	—	15.35
Maintenance of State Forests . . .	22,000.00	—	21,998.75	—	1.25
Prevention of Forest Fires . . .	65,000.00	—	64,999.98	—	.02
Protection against Forest Fires . . .	1,500.00	—	2,056.64	—	Def.*556.64
Reimbursement for Fighting Forest Fires . . .	2,000.00	—	26.70	—	1,973.30
Suppression of Gypsy and Brown-tail Moths . . .	60,000.00	\$3,695.94	63,517.23	\$178.71	—
Purchase and Development of State Forests . . .	150,000.00	2,277.59	150,824.38	1,453.21	—
Maintenance of Standish Monument . . .	2,000.00	—	1,990.47	—	9.53
Maintenance of Mount Grace . . .	500.00	—	498.44	—	1.56
Land for Willard Brook . . .	—	6,529.16	1,602.00	—	4,927.16
Special, Forest Lands Improvements . . .	103,000.00	—	102,999.45	—	.55
Standish Monument Repairs . . .	—	6,411.25	6,411.25	—	—
Barnstable County Fire Patrol . . .	3,000.00	—	2,984.35	—	15.65
Federal Forestry Fund—Nurseries . . .	—	3,565.56	3,412.80	152.76	—
Federal Forestry Fund—Fires . . .	—	34,343.27	29,770.63	4,572.64	—
	\$461,385.00	\$56,822.77	\$500,925.58	\$6,357.32	\$10,924.87
Purchase of Salisbury Beach . . .	50,000.00	—	—	50,000.00	—
Division of Parks . . .	2,350.00	—	—	—	2,350.00
	\$513,735.00	\$56,822.77	\$500,925.58	\$56,357.32	\$13,274.87

\* \$556.64 on deficiency bill.



**STATEMENT OF EXPENDITURES AND RECEIPTS ON STATE FORESTS FOR THE  
YEAR ENDING NOVEMBER 30, 1931**

	Planting and Nursery	General Upkeep, Fire Lines, Roads	Surveying and Titles	Land	Total	Receipts
Arthur Warton Swann	\$116.12	\$1,492.81	—	—	\$1,608.93	\$70.25
Ashburnham	141.25	1,908.25	\$438.50	\$1,762.40	4,250.40	—
Barre	200.75	531.04	31.00	—	762.79	92.50
Bash Bish	—	—	—	—	—	—
Beartown	—	45.00	36.00	—	81.00	—
Blandford	50.00	1,013.04	777.22	—	1,840.26	400.00
Brimfield	98.00	2,523.45	480.09	1,055.80	4,157.34	32.75
Campbells Falls	—	—	42.00	10.00	52.00	—
Clarksburg	—	42.75	—	—	42.75	108.00
Colrain	—	176.25	—	—	176.25	762.20
Conway	—	161.68	—	—	161.68	—
D. A. R.	54.35	1,154.50	40.30	—	1,249.15	—
Erving	846.54	4,377.64	73.10	950.00	6,247.28	944.00
Fed. Wom. Clubs	—	1,203.00	298.94	—	1,501.94	—
Foxborough	94.00	1,349.71	—	—	1,443.71	461.25
Harold Parker	192.00	5,246.26	546.48	—	5,984.74	591.00
Hawley	—	—	—	—	—	—
Hubbardston	76.00	894.16	31.50	—	1,001.66	45.00
Huntington	—	—	1,226.75	—	1,226.75	—
Leominster	267.57	3,034.97	187.00	—	3,489.54	135.00
Marthas Vineyard	437.85	7,018.11	—	—	7,455.96	—
Mohawk Trail	—	2,996.10	53.45	—	3,049.55	2,720.66
Monroe	—	—	424.39	—	424.39	20.63
Mount Grace	—	450.21	—	—	450.21	72.25
Myles Standish	822.25	10,866.04	55.90	—	11,744.19	1,934.25
Northfield	—	403.70	69.00	—	472.70	—
Oakham	—	2,484.28	15.00	132.50	2,631.78	30.00
October Mountain	190.75	12,031.31	144.50	750.00	13,116.56	1,702.66
Otis	—	632.00	—	—	632.00	10.00
Otter River	523.95	3,607.76	—	—	4,131.71	241.00
Oxford	—	—	—	—	—	—
Peru	—	—	17.00	450.00	467.00	—
Petersham	—	284.40	25.00	—	309.40	—
Pittsfield	—	—	—	—	—	—
Sandisfield	—	1,461.59	607.71	400.00	2,469.30	85.00
Savoy	—	1,479.14	39.64	4,300.00	5,818.78	870.84
Shawme	1,029.96	6,668.58	46.51	458.83	8,203.88	59.00
Shutesbury	—	403.25	510.50	1,674.82	2,588.57	53.04
Spencer	67.50	379.31	—	—	446.81	248.29
Sutton	46.25	—	—	—	46.25	—
Templeton	20.00	270.00	90.04	156.25	536.29	—
Tolland-Granville	—	3,477.43	—	—	3,477.43	75.00
Warwick	—	—	491.23	2,408.18	2,899.41	—
Wendell	241.75	3,560.00	862.47	—	4,664.22	85.05
Westminster	—	410.00	137.50	—	547.50	101.25
Willard Brook	75.75	2,418.88	416.18	4,264.00	7,174.81	214.72
Windsor	—	119.00	20.15	—	139.15	—
Worthington	—	—	27.35	701.25	728.60	—
	\$5,592.59	\$86,575.60	\$8,262.40	\$19,474.03	\$119,903.62	\$12,165.59

*Receipts for 1931*

For cordwood	\$4,480.94
“ books	32.60
“ berries, apples, etc.	593.50
“ lumber	4,079.35
“ Christmas trees	672.59
“ press brush	444.13
“ camp sites and rentals	1,955.00
“ receipts at Standish Monument	850.70
“ receipts at Mohawk Trail	41.58
“ trees sold	7,586.93
“ examinations	76.00
“ witness fees	3.00
“ income under will L. M. Standish	156.81
“ forest fire supplies, etc.	1,244.73
“ reimbursement from Barnstable County	1,890.04
“ gypsy moth supplies	169.37
“ interest on bank account	96.71
<b>Total</b>	<b>\$24,373.98</b>

## THE DISTRIBUTION OF SUPPLIES

Supplies have been furnished as usual for gypsy moth work, to such towns as we could assist with our limited appropriation. We have also purchased supplies for forestry and forest fire work. Transfers have been made to our gypsy moth appropriation for such charges.

*List of Supplies furnished in 1931*

Ashby . . . . .	\$168.00	Newbury . . . . .	\$519.82
Berkley . . . . .	205.91	Norfolk . . . . .	98.48
Berlin . . . . .	325.69	North Reading . . . . .	352.82
Bolton . . . . .	426.95	Northborough . . . . .	605.54
Boxborough . . . . .	117.24	Norwell . . . . .	509.60
Boxford . . . . .	283.24	Pembroke . . . . .	347.80
Boylston . . . . .	245.47	Plainville . . . . .	127.04
Brewster . . . . .	386.52	Plympton . . . . .	208.05
Carlisle . . . . .	244.24	Raynham . . . . .	198.91
Chilmark . . . . .	360.27	Rowley . . . . .	498.02
Dennis . . . . .	549.15	Sandwich . . . . .	520.12
Dunstable . . . . .	331.00	Sherborn . . . . .	78.15
Eastham . . . . .	201.67	Shirley . . . . .	313.36
Freetown . . . . .	224.95	Sterling . . . . .	114.64
Georgetown . . . . .	402.97	Stow . . . . .	23.19
Halifax . . . . .	491.11	Sudbury . . . . .	317.60
Hopkinton . . . . .	3.42	Truro . . . . .	109.82
Lakeville . . . . .	416.64	Tyngsborough . . . . .	341.69
Lunenburg . . . . .	383.17	Wellfleet . . . . .	197.49
Lynnfield . . . . .	180.56	West Boylston . . . . .	3.03
Mashpee . . . . .	434.73	West Bridgewater . . . . .	465.24
Middleton . . . . .	164.90	West Newbury . . . . .	5.71
		West Tisbury . . . . .	624.98
			<hr/>
			\$13,128.90
Automobile supplies . . . . .			\$619.28
Forest Fire Patrol . . . . .			67.35
General Forestry and Nurseries . . . . .			198.02
Maintenance of State Forests . . . . .			166.97
North Shore Special Work . . . . .			35.81
Prevention of Forest Fires . . . . .			525.85
Purchase and Development of State Forests . . . . .			434.25
Special, Forest Lands Improvements . . . . .			226.73
			<hr/>
			\$15,403.16

**STATEMENT OF EXPENDITURES AND REIMBURSEMENTS OF TOWNS AND  
CITIES FOR THE YEAR ENDING NOVEMBER 30, 1931, ON ACCOUNT OF GYPSY  
MOTH WORK**

Cities and Towns	1931						1932
	Required Expendi- ture	Total Net Expendi- ture	Private Work	Reimburse- ment	Supplies	Total Amount Received from State	Required Expendi- ture
Ashby . . .	\$420.11	\$620.21	\$33.28 *111.45 }	\$200.00	\$168.00	\$368.00	\$467.44
Berkley . . .	404.96	1,165.40	152.00	760.00	205.91	965.91	385.82
Berlin . . .	445.04	906.04	25.00 *63.00 }	461.00	325.69	786.69	427.74
Bolton . . .	532.58	875.50	46.00 *137.14 }	338.50	426.95	765.45	532.95
Boxborough . . .	154.67	205.60	*171.00	150.00	117.24	267.24	154.82
Boxford . . .	545.17	968.86	259.54	399.00	283.24	682.24	545.79
Boylston . . .	381.41	659.09	172.50 *45.48 }	267.45	245.47	512.92	350.02
Brewster . . .	781.97	1,156.14	209.75 *3.00 }	374.17	386.52	760.69	820.31
Carlisle . . .	311.79	711.79	—	400.00	244.24	644.24	364.77
Chilmark . . .	243.24	1,705.67	—	1,460.67	360.27	1,820.94	264.02
Dennis . . .	1,327.14	1,327.33	25.50 *90.40 }	—	549.15	549.15	1,408.82
Dunstable . . .	200.64	500.64	130.20 *205.60 }	300.00	331.00	631.00	213.44
Eastham . . .	455.57	686.76	—	226.00	201.67	427.67	503.69
Freetown . . .	884.69	1,382.72	199.50	498.00	224.95	722.95	886.96
Georgetown . . .	849.58	1,196.56	698.70	340.00	402.97	818.53	818.53
Halifax . . .	620.58	970.58	462.17 *21.56 }	350.00	491.11	841.11	636.38
Hawley . . .	124.41	177.20	—	52.20	—	52.20	109.01
Hopkinton . . .	1,216.69	—	—	—	3.42	—	1,217.31
Lakeville . . .	675.58	1,081.96	133.00 *36.96 }	349.15	416.64	765.79	675.57
Lunenburg . . .	1,018.24	1,361.01	1,064.40	300.10	383.17	683.27	1,018.79
Lynnfield . . .	1,354.57	1,602.54	342.88	247.97	180.56	428.53	1,360.09
Mashpee . . .	446.76	871.13	43.33 *23.00 }	412.54	434.73	847.27	413.66
Middleton . . .	698.15	715.81	134.75 *41.71 }	—	164.90	164.90	709.54
Newbury . . .	1,036.09	2,580.50	1,019.25 *324.00 }	1,161.81	519.82	1,681.63	1,013.28
Norfolk . . .	741.07	—	—	—	98.48	—	761.75
North Reading . . .	955.49	1,703.64	647.62	421.00	352.82	773.82	956.16
Northborough . . .	920.15	1,272.57	414.92 *161.92 }	350.10	605.54	955.64	914.15
Norwell . . .	861.61	1,059.08	795.46 *15.57 }	197.47	509.60	707.07	861.02
Pembroke . . .	1,160.06	1,327.20	322.00 *1.26 }	165.00	347.80	512.80	1,187.86
Phillipston . . .	193.23	522.60	59.00	300.00	—	300.00	193.15
Plainville . . .	734.76	1,453.70	77.75	600.00	127.04	727.04	743.67
Plympton . . .	311.93	795.52	161.50	481.00	208.05	689.05	311.91
Raynham . . .	847.56	888.00	146.50	—	198.91	198.91	854.12
Rowley . . .	685.23	1,085.08	508.23 *243.63 }	399.70	498.02	897.72	685.56
Sandwich . . .	1,090.60	1,160.80	67.00 *84.00 }	—	520.12	520.12	1,127.89
Sherborn . . .	724.43	703.42	332.00	—	78.15	57.14	735.44
Shirley . . .	1,005.40	1,230.54	171.14	200.00	313.36	513.36	1,000.97
Sterling . . .	720.70	1,170.73	25.00	450.00	114.64	564.64	822.85
Stow . . .	736.94	1,175.58	22.10	438.64	23.19	461.83	729.73
Sudbury . . .	1,081.94	1,390.42	4.80 *224.78 }	306.00	317.60	623.60	1,223.71
Truro . . .	462.26	645.00	*12.00	176.00	109.82	285.82	457.09
Tyngsborough . . .	556.86	927.60	442.51 *99.00 }	350.50	341.69	692.19	493.86
Wellfleet . . .	605.03	903.27	198.08	298.24	197.49	475.73	634.58
West Bridgewater . . .	1,326.78	1,723.69	787.00 *95.04 }	370.40	465.24	835.64	1,326.13
West Newbury . . .	516.40	760.80	90.00	240.01	5.71	245.72	517.71
West Tisbury . . .	378.46	1,460.25	—	1,081.79	624.98	1,706.77	380.18

\* Lead sold.



